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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,763	12/02/2003	Prasun K. Raha	TI-37053 (032350.B544)	3275
23494 7590 01/10/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER FILE, ERIN M	
			ART UNIT	PAPER NUMBER
			2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/725,763

Applicant(s)

RAHA ET AL.

Examiner

Erin M. File

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-21 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/22/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 5, 8, 11, 12, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hogeboom (U.S. Patent No. 5,818,304) in view of Mascenas et al. (U.S. Pub. 2002/0145473).

Claims 1, 8, 15, Hogeboom discloses:

- a phase frequency detector operable to detect a frequency difference (fig. 1, frequency detector 128 receives reference clock 126 and a comparison signal) and a phase difference (fig. 1, phase detector 114) between a clock signal and a comparison signal, the comparison signal being derived from an output signal of the PLL (the second input to frequency detector and phase detector is the recovered clock) and communicate the frequency difference to a first charge pump generating a first current (fig. 1, frequency detector 128 outputs to charge pump 130); and communicate the phase difference to a second charge pump generating a voltage (fig. 1, phase detector 114 outputs to charge pump 120);
- the first charge pump operable to modify the first current according to the frequency difference (col. 3, lines 65-67);

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- the second charge pump operable to modify the voltage according to the phase difference (col. 3, lines 36-41);

Hogeboom fails to disclose:

- a voltage-to-current converter the converter operable to generate a second current corresponding to the voltage;
- communicate the first and second current to a current summer;
- the current summer operable to: combine the first and second currents with each other to generate a control current for a current-controlled oscillator (CCO); and communicate the control current to the CCO;
- and the CCO operable to generate one or more oscillating signals according to the first and second currents, a frequency of an oscillating signal from the CCO changing in response to the modification of the first current, a phase of the oscillating signal changing in response to the modification of the second current.

However, Mascenas discloses:

- a voltage-to-current converter the converter operable to generate a second current corresponding to the voltage (fig. 1, 114);
- communicate the first and second current to a current summer (fig. 1, 116);
- the current summer operable to combine the first and second currents with each other to generate a control current for a current-controlled oscillator (fig. 1, 116) and communicate the control current to the CCO (fig. 1, 110);
- and the CCO operable to generate one or more oscillating signals according to the first and second currents, a frequency of an oscillating signal from the CCO

changing in response to the modification of the first current (fig. 1, 110, output f_{osc} is frequency oscillating signal).

Because Mascenas discloses his invention improves jitter performance and reduces soft error rate while maintaining loop stability, it would have been obvious to one skilled in the art at the time of invention to incorporate the CCO as disclosed by Mascenas into the invention of Hogeboom.

Claims 4, 11, 18, the combined invention of Hogeboom and Mascenas discloses the elements of a first and second charge pumps and a voltage to current converter as described in claims 1, 8, and 15 above.

Claims 5, 12, 19, an oscillating signal, such as disclosed in the combined invention above (fig. 1, 110, output f_{osc} is frequency oscillating signal) inherently possesses both a frequency and a phase. Only one oscillating signal is required by claims 1, 8, and 15. Further, the limitation of the phases of oscillating signal being at least approximately evenly spaced about 360 degrees is also inherent in a periodic oscillating signal.

3. Claims 6, 13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hogeboom (U.S. Patent No. 5,818,304) and Mascenas et al. (U.S. Pub. 2002/0145473) as applied to claims 1, 8, 15 above, and further in view of Pandey (U.S. Pub. No. 2003/0168662).

Claims 6, 13, 20, neither Hogeboom nor Mascenas disclose a sinusoidal oscillating signal and one or more converters that are each operable to covert one or more oscillating signals into substantially square waves, however, Pandey discloses a

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sinusoidal oscillating signal and one or more converters that are each operable to convert one or more oscillating signals into substantially square waves ([0005], lines 5-15)

Because Pandey discloses that this circuit greatly reduces signal distortion ([0006], lines 11-12), it would have been obvious to one skilled in the art at the time of invention to incorporate the square wave conversion circuit as disclosed by Pandey into the combined invention of Hogeboom and Mascenas.

4. Claims 6, 13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hogeboom (U.S. Patent No. 5,818,304) and Mascenas et al. (U.S. Pub. 2002/0145473) as applied to claims 1, 8, 15 above, and further in view of Aikawa (U.S. Pub. No. 2003/0098746).

Claims 7, 14, 21, neither Hogeboom nor Mascenas disclose generating two oscillating signals that are at least approximately 180 degrees apart from each other in phase, however, Aikawa discloses generating two oscillating signals that are at least approximately 180 degrees apart from each other in phase ([0007], lines 3-6). The use of opposite phases is well known in the art for reducing inter-signal interference and would have been obvious to one skilled in the art at the time of invention to incorporate the signal generating as disclosed by Aikawa into the combined invention of Hogeboom and Mascenas.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-7, 11, 12, 14, 15-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claims 1 and 15 recite the limitation " the current summer" in line 13. There is insufficient antecedent basis for this limitation in the claim.
8. The recitation of claims 5, 12, 19, "the phases of the oscillating signal being at least approximately evenly spaced about 360 degrees" as well as the recitation of claims 7, 14, 21, "that are at least approximately 180 degrees apart from each other in phase" are unclear.
9. Claims 4, 11, 18 provides for the use first and second charge pumps and V2I converter to collectively function as a proportional integral (PI) circuit, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.
10. Claims 4, 11, 18 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Allowable Subject Matter

11. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claims 2, 3, 16, and 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 1:00PM-9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

EMF

1/7/2007


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER